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10/525,966	02/28/2005	Yozo Shoji	1640.1033	3180

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EXAMINER	
FLORES, LEON	

ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/525,966	SHOJI ET AL.	
	Examiner	Art Unit	
	LEON FLORES	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 April 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 April 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims (1-8) have been considered but are moot in view of the new ground(s) of rejection.

Response to Remarks

Applicant asserts that, *"Meidan does not teach or suggest "generates a radio modulation signal by multiplying an intermediate frequency band modulation signal from an intermediate frequency band modem by a local oscillation signal" as recited in claim 1".*

The examiner respectfully disagrees. The examiner did not, at any point in the last office action, mentioned that Meidan teaches generates a radio modulation signal by multiplying an intermediate frequency band modulation signal from an intermediate frequency band modem by a local oscillation signal". However, taking the contrary, Meidan does suggest the teaching of generating a radio modulation signal by multiplying an intermediate frequency band modulation signal from an intermediate frequency band modem by a local oscillation signal. (See fig. 1 & col. 6, line 50 – col. 7, line 12)

Applicant further asserts that, *"the prior art does not anticipate or render obvious "modulating a transmission signal in the frequency hopping system using the intermediate frequency band modem, and demodulating a received signal by each wireless communication terminal of the plurality of Wireless communication terminals" as recited in claim 1 (as amended)".*

The examiner respectfully disagrees. Prior art does teach modulating a transmission signal in the frequency hopping system using the intermediate frequency band modem (See fig. 6 ¶s 3 & 18), and demodulating a received signal by each wireless communication terminal of the plurality of Wireless communication terminals. (See fig. 7 & ¶ 3. Furthermore, one skilled in the art would know that a base station may use from a variety of communication protocols "frequency hopping system" in order to communicate with multiple mobile stations within a cell.)

Applicant further asserts that, *"AAPA and Meidan at least because the prior art does not anticipate or render obvious "each wireless communication terminal of the plurality of wireless communication terminals receives the reference local oscillation signal from the transmitting station, amplifies and band filters the signal, regenerates the reference local oscillation signal by an injection synchronous oscillator or an amplifier, and performs mutual communications using the regenerated signal as a local oscillation signal for use by a transmitting function and a receiving function".*

The examiner respectfully disagrees. The combination of Prior art and Meidan does suggest the teaching of each wireless communication terminal of the plurality of wireless communication terminals receives the reference local oscillation signal from the transmitting station (In Meidan, see figs. 1 & 2 & col. 6, line 36 - col. 7, line 15. Furthermore, one skilled in the art would know that a base station may use from a variety of communication protocols "frequency hopping system" in order to communicate with multiple mobile stations within a cell.), amplifies and band filters the signal (In Prior art, see fig. 7 "frequency hopping system also"), regenerates the

reference local oscillation signal by an injection synchronous oscillator or an amplifier, and performs mutual communications using the regenerated signal as a local oscillation signal for use by a transmitting function and a receiving function". (In Meidan, see figs. 1 & 2 & col. 6, line 36 - col. 7, line 15)

Applicant finally asserts that, *"Meidan in FIGS. 1 and 2 and their corresponding descriptions do not disclose or render obvious a transmitter that transmits a local oscillation in addition to a frequency hopping radio modulation signal. A modulator 106 is illustrated in FIGS. 1 and 2 of Meidan as being located before the amplifier 108, but no filtering is taught or suggested".*

The examiner respectfully disagrees. The reference of Meidan does suggest a transmitter that transmits a local oscillation in addition to a frequency hopping radio modulation signal. (See fig. 2 & col. 6, line 36 – col. 7, line 20) Although it is well known in the art to place a filter at the transmitting side prior to broadcasting a signal, the reference of Meidan does not explicitly teach that element. However, Prior art does teach filtering at the transmitting side prior to broadcasting a signal. (See fig. 6)

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. **Claims (1-3 & 5-7) are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (hereinafter Prior art) in view of Meidan et al. (hereinafter Meidan) (US Patent 5,506,863)**

Re claim 1, Prior art discloses a frequency hopping wireless communication method for performing communications between a plurality of wireless communication terminals, each wireless communication terminal having a transmitting unit for generating a radio modulation signal by multiplying an intermediate frequency band modulation signal from an intermediate frequency band modem by a local oscillation signal, and a receiving unit for generating an intermediate frequency band demodulation signal downconverted by multiplying a radio modulation signal by a local oscillation signal, and demodulating the signal in the intermediate frequency band modem, characterized in that the frequency hopping wireless communication method comprising: modulating a transmission signal in the frequency hopping system using the intermediate frequency band modem (See fig. 6: ¶ 3), and demodulating a received signal by each wireless communication terminal of the plurality of wireless communication terminals (See fig. 7: ¶ 3. One skilled in the art would know that a base

station may use from a variety of communication protocols "frequency hopping system" in order to communicate with multiple mobile stations within a cell.); and amplifying and band filtering the received signal. (See fig. 7: 8, 9 & ¶ 3)

But Prior art fails to explicitly teach transmitting a reference local oscillation signal from a transmitting station; receiving the reference local oscillation signal from the transmitting station, regenerating the reference local oscillation signal by an injection synchronous oscillator or an amplifier, and performing mutual communications using the regenerated signal as a local oscillation signal for use by a transmitting function and a receiving function in each wireless communication terminal of the plurality of wireless communication terminals.

However, Meidan does. (See figs. 1 & 2 & col. 6, line 36 - col. 7, line 15) Meidan teaches transmitting a reference local oscillation signal from a transmitting station ; receiving the reference local oscillation signal from the transmitting station, regenerating the reference local oscillation signal by an injection synchronous oscillator or an amplifier, and performing mutual communications using the regenerated signal as a local oscillation signal for use by a transmitting function and a receiving function in each wireless communication terminal of the plurality of wireless communication terminals. (Furthermore, one skilled in the art would know that a base station may use from a variety of communication protocols "frequency hopping system" in order to communicate with multiple mobile stations within a cell.)

Therefore, taking the combined teachings of Prior art and Meidan as a whole, it would have been obvious to one of ordinary skills in the art to have incorporated these

features into the system of Prior art, in the manner as claimed as taught by Meidan, for the benefit of acquiring synchronization between the base station and the subscriber.

Re claim 2, the combination of Prior art and Meidan further discloses a dedicated transmitting station for transmitting only the reference local oscillation signal. (In Meidan, see fig. 2: 146 & col. 6, line 36 - col. 7, line 15)

Re claim 3, the combination of Prior art and Meidan further discloses that wherein one wireless communication terminal of the plurality of wireless communication terminals acts as a base station or a parent station, and transmits a local oscillation signal for use in the base station or the parent station together with a radio modulation signal (In Meidan, see fig. 2: 146 & col. 6, line 36 - col. 7, line 15), and each child station, which is any wireless communication terminal of the plurality of wireless communication terminals other than the one wireless communication terminal acting as the base station or the parent station, receives the reference local oscillation signal transmitted by the base station or the parent station. (In Meidan, see fig. 1 & col. 6, line 36 - col. 7, line 15. Furthermore, one skilled in the art would know that a base station may use from a variety of communication protocols "frequency hopping system" in order to communicate with multiple mobile stations within a cell.)

Claim 5 is a system claim corresponding to method claim 1. Hence, the steps performed by method claim 1 would have necessitated the elements in system claim 5. Therefore, claim 5 has been analyzed and rejected w/r to claim 1 above.

Claim 6 is a system claim corresponding to method claim 2. Hence, the steps performed by method claim 2 would have necessitated the elements in system claim 6. Therefore, claim 6 has been analyzed and rejected w/r to claim 2 above.

Claim 7 is a system claim corresponding to method claim 3. Hence, the steps performed by method claim 3 would have necessitated the elements in system claim 7. Therefore, claim 7 has been analyzed and rejected w/r to claim 3 above.

4. **Claims (4 & 8) are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (hereinafter Prior art) in view of Meidan et al. (hereinafter Meidan) (US Patent 5,506,863), and further in view of Yozo Shoji et al. (hereinafter Yozo) "Proposal of Millimeter-wave Self-heterodyne Communication System", Communications Research Laboratory, Ministry of Posts and Telecommunications, June 2000.**

Re claim 4, Prior art discloses a frequency hopping wireless communication method for performing communications between a plurality of wireless communication terminals each wireless communication terminal having a transmitting unit for generating a radio modulation signal by multiplying an intermediate frequency band

modulation signal from an intermediate frequency band modem by a local oscillation signal, and a receiving unit for generating an intermediate frequency band demodulation signal downconverted by multiplying a radio modulation signal by a local oscillation signal, and demodulating the signal in the intermediate frequency band modem, the frequency hopping wireless communication method comprising: upconverting a modulation signal generated in an intermediate frequency band to a radio frequency band using a local oscillation signal functioning as a hopping synthesizer by the transmitting unit in each of the plurality of wireless communication terminals. (See fig. 6 & ¶ 3. One skilled in the art would know that a base station may use from a variety of communication protocols "frequency hopping system" in order to communicate with multiple mobile stations within a cell.)

But Prior art fails to teach simultaneously transmitting a frequency hopping radio modulation signal of a single-side band wave or a both-side band wave obtained by the upconverting and the local oscillation signal used in the upconverting; and downconverting a received signal by the receiving unit to a first intermediate frequency band signal using a local oscillation signal frequency hopping in a pattern obtained by adding a fixed frequency offset to a frequency hopping pattern corresponding to a desired reception wave.

However, Meidan does. (See figs 1 & 2 & col. 6, line 36 – col. 7, line 12 & col. 8, lines 6-50) Meidan discloses simultaneously transmitting a frequency hopping radio modulation signal of a single-side band wave or a both-side band wave (One skilled in the art would know that a signal can be sent either as a single-side band or double-side

band) obtained by the upconverting and the local oscillation signal used in the upconverting; and downconverting a received signal by the receiving unit to a first intermediate frequency band signal using a local oscillation signal frequency hopping in a pattern obtained by adding a fixed frequency offset to a frequency hopping pattern corresponding to a desired reception wave.

Therefore, taking the combined teachings of Prior art and Meidan as a whole, it would have been obvious to one of ordinary skills in the art to have incorporated these features into the system of Prior art, in the manner as claimed as taught by Meidan, for the benefit of acquiring synchronization between the base station and the subscriber.

The combination of Prior art and Meidan discloses the limitations as claimed above, except they do not explicitly teach that it extracts two signal components, a local oscillation signal component and a modulation signal component, by passing the downconverted signal through a band pass filter, and generating a product component of the two signal components, thereby regenerating a second intermediate frequency band modulation signal.

However, Yozo does. (See fig. 4 & sections 2 & 3, equation 2.) Yozo discloses a receiver that performs square-law detection.

Therefore, taking the combined teachings of Prior art, Meidan, and Yozo as a whole, it would have been obvious to one of ordinary skills in the art to have incorporated these features into the system of Prior art, as modified by Meidan, in the manner as claimed and as taught by Yozo, for the benefit of eliminating the influence of the phase-noise and frequency offset caused by mixing with the local carrier at the

transmitter. (See sections 1 & 2)

Claim 8 is a system claim corresponding to method claim 4. Hence, the steps performed by method claim 4 would have necessitated the elements in system claim 8. Therefore, claim 8 has been analyzed and rejected w/r to claim 4 above.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Seichiro ito. (JP2000332678 A)
- Tetsuo Nishiko et al. (JP200013342 A)

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEON FLORES whose telephone number is (571)270-1201. The examiner can normally be reached on Mon-Fri 7-5pm Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Payne can be reached on 571-272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/L. F./
Examiner, Art Unit 2611
June 25, 2008

/David C. Payne/

Supervisory Patent Examiner, Art Unit 2611